

Inter Office Memo

SEP 15 1982



Corporate Headquarters

To: Ted Voss
From: R.E. Kassar
Subject: Bank Street Project - Bob Stein Memo Attached Date: 9/13/82

I'm enclosing a copy of a memo from Bob Stein on the Bank Street Project in Science and Math Education which is self-explanatory.

Please look into the situation and advise me of your thoughts.

Thank you.

REK/sew

cc: Chris Jeffers
Alan Kay
Bob Stein

h
Sam Gibbon is an old friend of mine, ~~and is a better~~
He's terrific. I would certainly like to get involved
in this project. It would also be a great plus
for Atari and EB.
will let you know further

May 16, 1982
cc: Ted Cohen

file

September 2, 1982

To Alan Kay, Chris Jeffers

From Bob Stein

Subject: Bank Street Project in Science and Math Education

I met this week with Sam Gibbon. Formerly the producer of Sesame Street and executive producer of the Electric Company, Sam is currently the director of the Bank Street Project in Science and Math Education (as well as a member of the board of the Atari Institute). As winners of a highly competed-for contract with the Office of Education, Sam's group is exploring the use of new technologies in science and math education. With their 2.65 million dollar grant they are producing 26 15-minute episodes of an adventure story about 2 scientists and a group of teenagers on a whale research expedition. (See attached brochure.) The story will stand on its own as a drama, however a wide range of additional materials including microcomputer software and videodiscs will be created to be used in parallel with the tv programs. Some of the software, especially that aimed at younger children is logo based. Because of the story line which involves both whales and a sea voyage, there are numerous interesting paths of inquiry that can be explored - biological adaptation and survival, the food chain and the interdependence of species; navigation and the underlying principles of physics, mathematics and astronomy.

Sam would like to find additional funding for the project. He is looking for approximately \$500-750,000. A small part of this would go toward improving the production and dramatic value of the TV programs, but most is aimed at expanding the scope of the software and videodisc materials. For example, when they are done Sam expects to have a tremendously valuable collection of whale footage and is very interested in producing an "encyclopedic" videodisc on whales. He wants to try to construct a browsable domain with a number of entry points and variable pathways.

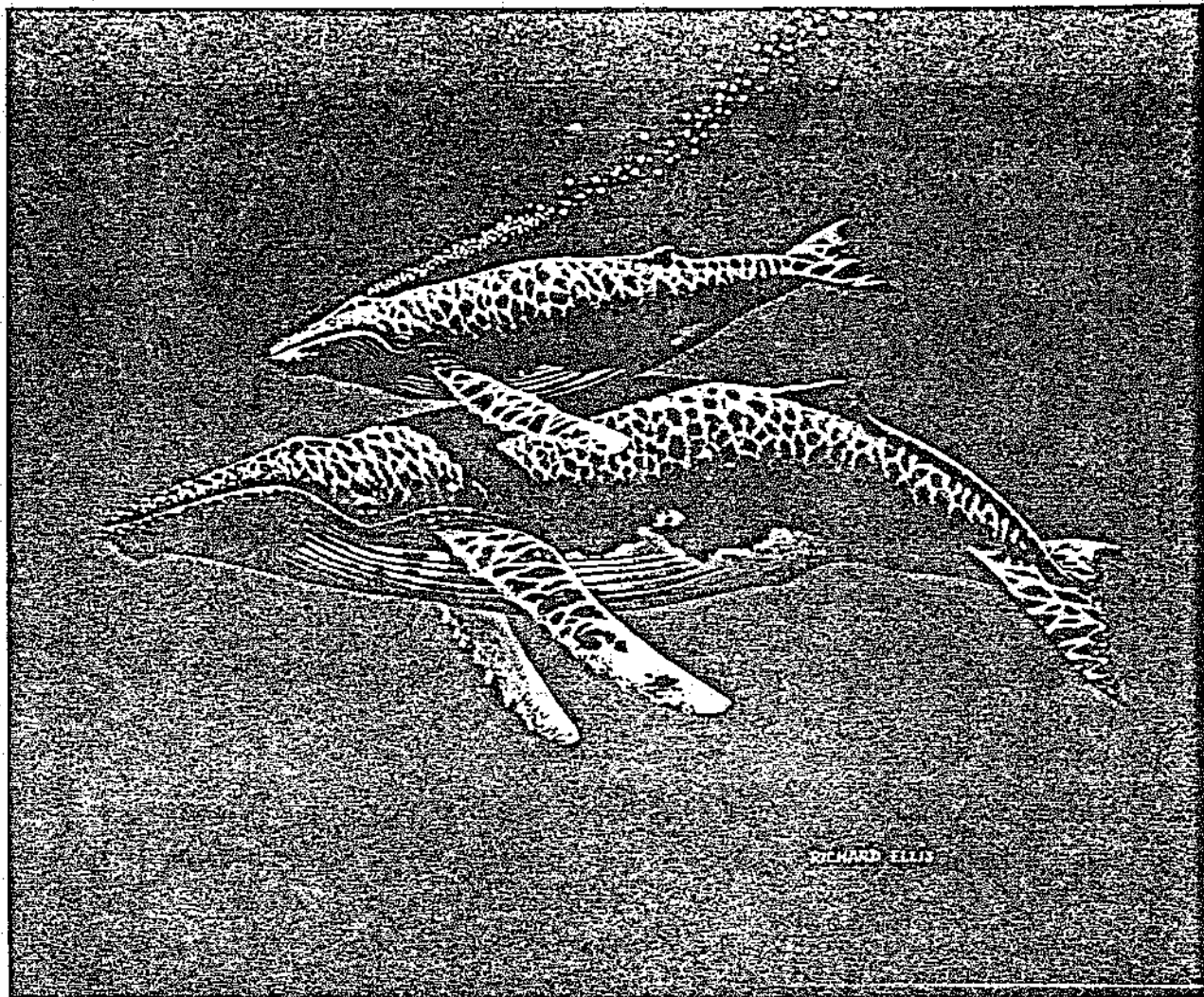
This project presents a number of interesting possibilities in terms of the Atari/EB venture:

1. If one company were to provide all the \$ needed, not only would its name be associated prominently with the TV series (to be aired on PBS probably, although there is still a small chance of ABC), but could be the publisher and distributor of the software and videodiscs.
2. Since they already have \$2.65 million of govt. money Atari/EB can buy into the project very cheaply.
3. They have a creative group in place and up to speed

4. I think Sam would be amenable and receptive to Atari input and collaboration, such that the projects research function and product development could coincide as much as possible with our own plans.

I know Van Doren would be very interested in pursuing this possibility. He and I went to visit Bank Street in February and spent an hour or so playing with a navigation simulation they were developing. It needed work but was a lot of fun and showed considerable promise. Van Doren was quite impressed and has referred to it often as an example of software heading in the right direction.

I suggest we look at the whole project carefully and assess its overall value to us. (The pilot of the TV show will be ready for viewing later this month.) Perhaps Brenda L. could take this on. Cynthia S. might want to look at the quality and nature of the LOGO work they are doing. If we like what we see we probably want to bring in the advertising folks etc. since our support of the project would amount to sponsorship of the TV program. Presumably part of the Atari \$ could come out of the advertising budget.



Humpback whale and cub by marine illustrator Richard Ellis from "The Book of Whales" (Alfred A. Knopf).

CONVEYING THE EXCITEMENT OF SCIENCE

Project in Science and Mathematics Education

Eleven-year-old C.T. Granville sits on the foredeck of the ketch "Mimi," alone and quiet in the darkness during his first night at sea. Suddenly the sound of an enormous creature breathing emerges from the water. The young boy is terrified.

"Now this is scary and interesting," says Sam Gibbon, executive director of a Bank Street television series on science and mathematics for children. "Here's a kid from a farm in Ohio, feeling lost and lonely, miles at sea. And here's a huge creature, in the ocean next to the boat, taking a breath. From this one

moment can be drawn an enormous amount of science and math."

As it happens, the sea creature is a whale — a rich resource for teaching and learning. The study of whales and their environment leads naturally to issues such as biological adaptation and survival, the food chain, and the interdependence of species. Similarly, because much of the series takes place on a boat, questions about the mechanisms of buoyancy and about methods of navigation arise. Combined, these story elements give rise to underlying questions about principles of physics, mathematics, geometry, and astronomy. As the crew navigates the ship, locates whales and their feeding grounds, and records data, there are many opportunities to illustrate techniques of

measurement, mapping, graphical representation, and the use of computers.

Bank Street's Project in Science and Mathematics Education is creating the television series through a \$2.65 million contract with the U.S. Department of Education. Twenty-six 15-minute episodes will be presented in the form of an adventure story about two scientists and a group of teenagers on a whale research expedition (see *Storyline and Cast of Characters* on page 3). The story will stand on its own as a drama and may also be used with supplementary classroom materials. Both the television series and supplementary materials will exploit the educational potential of new communication technologies.

Bank Street has outlined an ambitious set of goals for the project:

Meet the Director...

Samuel Y. Gibbon, Jr., director of the Project in Science and Math Education, has a distinguished background in children's television and the academic world. He began his career with CBS in 1957 and was associate producer and writer for "Captain Kangaroo" for seven years. He has been associated with the Children's Television Workshop since 1968 — as producer of "Sesame Street," executive producer of "The Electric Company," and executive director for the developmental phase of "3-2-1 Contact," the CTW series on science, technology and the environment for 8 to 12 year olds. He is a lecturer on education at the Harvard Graduate School of Education.

Gibbon received a B.A. in English Literature from Princeton University in 1953. He was awarded a Woodrow Wilson Fellowship and studied Elizabethan theater at the University of London as a Fulbright Fellow. In the U.S. Army from 1954 to 1956, Gibbon was assigned to Special Services Entertainment — as producer-director of soldier shows and actor with the Seventh Army Repertory Company on two European tours.

He won two National Academy of Television Arts and Sciences "Emmy" Awards — as producer of "Sesame Street" in 1970 and executive producer of "The Electric Company" in 1977. Gibbon's publications include "Sesame Street, The Electric Company, and Reading" in the volume *Toward a Literate Society: A Report from the National Academy of Education* (McGraw Hill).

Curriculum Goals

The television series will present a chunk of the real world, rich with information about whales, ships, the sea, marine science, and techniques of survival on land. The curriculum is organized around three sets of concepts and principles intended to give order and coherence to these facts.

- **Substantive concepts.** The physical and life sciences are usually taught as separate disciplines. Bank Street will present scientific concepts and principles as an integrated web of knowledge linked naturally and directly to the phenomena observed in the television series. We have chosen as an embracing concept the notion that the earth is a vast ecosystem made up of subsystems. Within this master concept, we will explore both biological principles having to do with adaptation and survival and physical principles having to do with matter and energy, which apply to nonliving as well as living systems.

- **Scientific method.** Our aim is to orient children toward rational and empirical inquiry. We want them to attack concrete problems by using the scientific methods of observation, interpretation, hypothesis creating and testing and the ill-defined but essential role of hunches, tinkering, and learning from failures. We will emphasize the role of technology in the scientific enterprise.

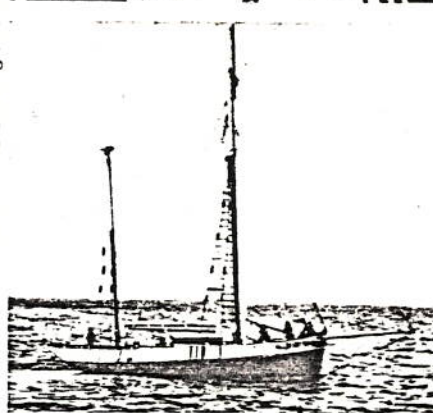
- **Mathematics and measurement.** These are important tools that enable scientists to collect and summarize data and to express concepts clearly and precisely. Among the specific principles in this set are (a) numerical representation of physical phenomena, (b) graphical representation of numerical data, (c) graphical representation of two-variable relationships, (d) map construction and interpretation, and (e) some elementary statistical ideas such as averaging and sampling.

➔ • To enhance children's understanding of science, mathematics and technology, • To help children master principles of the scientific method which they can apply to their own investigations, • To help children recognize how

science and technology can be used to solve problems they encounter, • To help children understand what scientists do and consider careers in science and technology for themselves, • To foster an interest in science among boys



Photos: Anne Darling and Barbara Rios



From top left: on location with executive director Sam Gibbon; special assistant Dick Hendrick interviewing children; taping a background briefing with scientist Kim Kastens; evaluation specialist Cindy Char and curriculum development coordinator Jeff Travers meeting with science teachers; the ketch "Mimi."

and girls from all backgrounds, • To provide teachers with a model of how to integrate the microcomputer with the classroom curriculum, particularly in science and mathematics, and • To provide teachers with a new model of science and mathematics education, incorporating new technology as both content and process.

"In developing the curriculum and storyline, we have sharpened our definitions of these goals and begun to distinguish among goals that can be achieved through the TV series itself and those that are best achieved through activities in the classroom or home with the series acting as a catalyst," Gibbon explains. "The series will convey facts about whales, ships, the sea, and techniques of survival on land. It will present models of scientific thinking and show various technologies in use, including computers. These can be incorporated directly into the TV segments and, according to research evidence, absorbed and retained by child viewers."

The Storyline

Three teenagers join two young scientists from the Noyes Institute of Ocean Research (a fictional amalgam of several actual research institutions) as student assistants on a seaborne scientific expedition tracking and studying humpback whales. The institute has chartered a boat called the "Mimi" and the skipper has, somewhat reluctantly, taken his 11-year-old grandson for the voyage. So they are a captain and crew of six when they set sail.

The plot has 26 15-minute episodes, some centering on problems directly related to the scientific mission and some on the unplanned adventures that result when "Mimi" is damaged in a heavy storm and must be beached for emergency repairs. The episodes have been grouped into 13 pairs, allowing for public or commercial broadcast as a series of half hours. In most of the pairs, the first episode will end in a cliffhanger, confronting the characters and viewers with a problem that is to be resolved in the second episode. For some of these, supplementary materials can be used in the classroom after the first episode of each such pair to allow children to try their own hands at solving the problem confronting the characters — for example, figuring out the position of the boat when it is lost at sea.

Cast of Characters

Clement Granville. Jack of all trades and master of many, Granny is owner and captain of the ketch "Mimi," named for his late, beloved wife. A crusty manner belies Granny's basic warmth. As the story develops, Granny grows closer to his grandson and forms a bond with the teenager, Rachel.

Anne Abrams. Brainy, attractive oceanographer and research fellow at Noyes, Anne is adept at deflating an overblown ego or a tense moment with a gentle joke. A fascination with computers and talent with water colors lead Anne to create beautiful computer graphics. She is a mentor for Arthur and develops a close relationship to Sally Ruth, who teaches her to sign.

Ramon Rojas. Young marine biology Ph.D. and Noyes research associate, Ramon is at once wet behind the ears and wise beyond his years. Born in a tiny Puerto Rican fishing village, marine biology is his path back to the sea. Ramon is confused by his feelings toward Anne and cheerfully oblivious to Rachel's crush on him.

Sally Ruth Cochran. A student at College of the Atlantic, Sally Ruth has a special interest in whale songs through her two obsessions — scuba diving and communications. Deaf from an early age, she lip-reads and signs perfectly. Definitely a survivor, Sally Ruth embodies the qualities of strength and gentleness, competence and sensitivity.

Rachel Fairbanks. Rachel, like many adolescents, is really two people. Both are 16, white, Connecticut suburban, and accomplished sailors. One has come to hate and reject many of the traits she sees in — but shares with — her parents. The other is helpful and engaging. Through sailing, a special relationship develops between Granny and the "nice" Rachel.

Arthur Spencer. A 16-year-old black kid from a large middle-class family of achievers, Arthur is an honor student and electronics wizard. His favorite diversion is electronic games, and his friends call him "Vader" or "Mr. Screen." A mutual interest in computers fosters close ties with Anne. Arthur helps Rachel see her two "selves."

Clement Tyler "C.T." Granville. At home on the farm in Ohio, C.T. is responsible, inventive, enthusiastic and funny. Aboard the "Mimi" he feels misplaced, even rejected, at first. On the island, C.T. begins to reveal his life skills. He brings to science the 11 year old's "howcums" and "gee whizzes" that teenagers often cannot bring themselves to express. The development of his relationship with his grandfather is a central theme.



Two packages of supplementary materials will be available with the TV series, one for classrooms with computers and another for classrooms without. The software developed for classrooms with computers will help students learn some of the many ways in which computers can be used — for experiments, simulations, data collection, analysis, and graphing as well as puzzles and games. Students will also receive an introduction to programming in the LOGO language, a powerful higher-level language which has been designed especially for easy access by children. For classrooms without computers, the package will include (a) activities that parallel those the children do on computers, (b) guides to math and problem-solving skills, (c) written materials — charts, graphs, and student worksheets, (d) notes to teachers, and (e) a cross-reference of subject matter and index to classroom materials.

Explicit teaching is possible within the TV series to the extent

that it is natural for the scientists to teach the student members of the crew. Classroom activities and microcomputer exercises will extend many additional ideas that are implicit in the series itself. They will also give children opportunities to manipulate materials and apply principles in concrete fashion.

Teaching by example is particularly important in the case of the project goals that have to do with children's attitudes toward science and appreciation of its human uses. "We hope that the TV series can communicate the idea that science is an exciting and rewarding human enterprise which is not the exclusive province of white males," says Gibbon. "We hope it can show how science and technology contribute to each other — while raising issues about the consequences of applying science and technology and about the responsibilities of both scientists and the public. Our strategy is to try to create these attitudes and sensitivities, not through explicit teaching or preaching, but through the development and interplay of characters in the TV series."

The Project in Science/Mathematics Education is a collaborative venture under Gibbon's overall direction. Microcomputer applications for the classroom are being developed by Bank Street's Center for Children and Technology and two Cambridge-based firms — Computer Learning Connection, Inc. and Technical Education Research Centers. Television production is being undertaken by Peace River Films, Inc., also based in Cambridge.

Bank Street personnel include: Lorin Driggs, special assistant to Sam Gibbon; Karen Sheingold, deputy director for evaluation; Jeff Travers, coordinator of curriculum development; Barbara Dubitsky, coordinator of classroom materials; Richard Hendrick, special assistant for scripting and production; Jan Jewson and Cindy Char, evaluation specialists; Tom Roberts, assistant evaluation specialist, and Susan Smith, content researcher.



Children program computers in classrooms at the Bank Street School in connection with research by the College's Center for Children and Technology.

Barbara Rios

More information about Bank Street...

Bank Street College, founded in 1916 as the Bureau of Educational Experiments, is a leader in early childhood education and a pioneer in improving the quality of education for children and youth. We at Bank Street perform three interrelated activities — teaching, research, and community service — through a Graduate School of Education, demonstration model School for Children, Research Division, School and Community Services Division, and Publications Group.

The Project in Science and Mathematics Education is part of the Research Division but also includes personnel from other divisions of the College as well as interdisciplinary specialists from outside. Indeed, this is a hallmark of the Bank Street approach to education: the bringing together of people from different backgrounds to integrate and weave their professional training, skills, and experiences in an effort to find solutions to the educational problems of our complex society.

Among Bank Street's other programs and projects in science and mathematics education:

- **Center for Children and Technology.** Doing research on (a) how electronic technology, such as the microcomputer, may influence children's learning and (b) acquiring research-based knowledge on how to use technology to the developmental and educational advantage of children. Center staff teach the course "Microcomputers in the Classroom: Practice and Theory" in the Graduate School of Education and "Microcomputers: An Introduction through the LOGO Language" through the *New Perspectives* series of one-credit and two-credit summer or weekend graduate courses. The Center also offers computer workshops on classroom uses of microcomputers. (For technical information and to arrange workshops, call Barbara Dubitsky at (212) 663-7200 extension 389.)

- **Expanded Programs.** From the Bank Street Graduate School of Education, providing inservice training for teachers — at the teachers' own work site — via course work, seminars, and consultation in areas such as curriculum development and evaluation. Among the courses offered is "Mathematics for Teachers."

- **Tiorati Workshop for Environmental Learning.** At Harriman State Park, providing training in environmental education for teachers from inner city and suburban schools. "Interrelated Science Workshop in the Urban Environment" is a city-based version of the Tiorati Workshop course. It helps city school teachers integrate science with other areas of the curriculum.

Bank Street College is located on the Upper West Side of Manhattan. Our neighbors include the Cathedral of St. John the Divine, Goddard Space Flight Center, Columbia University, Barnard College, and the Manhattan School of Music. We are ten minutes by public transportation from Lincoln Center for the Performing Arts and twelve minutes across Central Park to Fifth Avenue and New York City's Museum Mile.

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